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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/532,563

12/05/2005

Jan-Henrik Ardenkjaer-Larsen

PN0283

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05/07/2010

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IP DEPARTMENT 101 CARNEGIE CENTER

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EXAMINER

SCHLIENTZ, LEAH H

ART UNIT

PAPER NUMBER

1618

MAIL DATE

DELIVERY MODE

05/07/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/532,563	Applicant(s) ARDENKJAER-LARSEN ET AL.	
	Examiner Leah Schlientz	Art Unit 1618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 February 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Acknowledgement of Receipt

Applicant's Response, filed 2/1/2010, in reply to the Office Action mailed 9/30/2009, is acknowledged and has been entered. Claim 10 has been cancelled. Claims 1-9 are pending and are examined herein on the merits for patentability.

Response to Arguments

Applicant's arguments have been considered but are moot in view of new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ardenkjaer-Larsen *et al.* (US 6,466,814) in view of Pines (US 6,426,058).

Ardenkjaer-Larsen teaches hyperpolarization of a nuclei effected by a hyperpolarizable gas, such as by (a) hyperpolarizing a hyperpolarizable gas before, during or after introducing a high T_1 agent thereto whereby to cause nuclear polarization of said high T_1 agent; and b) dissolving in a physiologically tolerable solvent said high T_1 agent (column 19, lines 1-12). Physiologically tolerable solvent includes perfluorocarbon (column 3, line 8). Hyperpolarizable gas is preferably ^{129}Xe (column 19, line 28). It can be produced by irradiating agent e.g. with an electron spin resonance transition stimulating radiation (e.g. microwave radiation). For example, hyperpolarization of xenon can be accomplished by irradiating a polarizing agent whereby to cause dynamic nuclear polarization; polarizing agents include nitroxide, trityl, etcl (radicals) (column 19, lines 63 - column 20, line 9). Hyperpolarization could be done in either liquid or solid form, the radical could be added in pure form or bound to a matrix. After irradiation, heating of the sample could release hyperpolarized gas and a new batch of xenon could be condensed and irradiated (column 20, lines 10-30).

While Ardenkjaer-Larsen discloses a) hyperpolarising a hyperpolarisable gas before, during or after introducing a high T_1 agent thereto and b) dissolving in a physiologically tolerable solvent (e.g. perfluorocarbon) said high T_1 agent, rather than introduction of solvent prior to hyperpolarization of the hyperpolarisable gas, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the order of addition of solvent in the process of Ardenkjaer-Larsen.

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Pines teaches that it can be advantageous to dissolve a noble gas in a liquid prior to hyperpolarizing the noble gas (column 9, lines 25-30). Preferred noble gases include xenon, helium, etc. (column 9, lines 5-10). Suitable liquids/fluids include fluorocarbons, lipids, etc (column 9-10).

It would have been obvious to one of ordinary skill in the art at the time of the invention to dissolve xenon in a fluid such as perfluorocarbon prior to hyperpolarizing the xenon in the methods of Ardenkjaer-Larson. One would have been motivated to do so because Pines teaches that it can be advantageous to dissolve a noble gas in a liquid prior to hyperpolarizing the noble gas (column 9). One would have had a reasonable expectation of success in doing so because Ardenkjaer-Larson teaches that hyperpolarization could be done in either liquid or solid form, the radical could be added in pure form or bound to a matrix (column 20).

Conclusion

No claims are allowed at this time.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leah Schlientz whose telephone number is (571)272-9928. The examiner can normally be reached on Monday-Tuesday and Thursday-Friday 9 AM-5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Hartley can be reached on 571-272-0616. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael G. Hartley/
Supervisory Patent Examiner, Art Unit 1618

LHS